

7. (Twice Amended) An electrochromic element comprising a pair of transparent electrodes between which an electrochromic layer which develops color on reduction and a transparent ionic conductor layer exist, wherein said ionic conductor layer contains the gel electrolyte of any one of claims 1, 2, 4 or 5.

REMARKS

The claims are 1, 2 and 4-7, with claim 1 being the sole independent claim. Claims 6 and 7 have been amended to reflect the cancellation of claim 3 and the elimination of multiple dependency of claim 5. Clearly, no new matter has been added.

In the Advisory Action, the Examiner has alleged that the cited prior art documents teach electrolytes based on intermolecular bonding.¹ Applicants respectfully disagree with the Examiner's position and request reconsideration of the arguments presented in the Amendment After Final Rejection filed on September 30, 2002, which clearly show that WO 98/11619 (Green); GB 2,212,504 (GB '504); U.S. Patent No. 5,470,667 (Williams); and Makoto Ue et al., "A New Gelling Agent and Its Application as a Solid Electrolyte for Lithium Batteries," 38(9) Electrochimica Acta 1301-1302 (1993) (Ue) do not disclose or suggest the gel electrolyte as presently claimed. For the Examiner's convenience, these arguments are reproduced below.

¹JP 11-185836 (JP '836) is not prior art, as recognized by the Examiner in the Advisory Action.

Green is directed to an electrolyte suitable for batteries, supercapacitors, electrochromic windows and displays. This reference discloses an electrolyte comprising a composite of a polymer and a molten salt electrolyte immobilized within a polymer such as polyethylene oxide. This polymer is not an associated body formed by coordination bonding or hydrogen bonding, as alleged by the Examiner in the Office Action.² The electrolyte obtained in Green is not a gel, but is a flexible film. Clearly, this reference cannot anticipate the present invention.

GB '504 cannot provide the teachings lacking in Green. The Examiner cited this reference for a teaching of a solid polyacrylamide electrolyte that includes an amine-substituted cyclohexane ring as a plasticizer. Even if, assumed, arguendo, that GB '504 contains the alleged teaching, this reference fails to disclose or suggest a gelling agent that is forming an associated body by intermolecular bonding. Therefore, the presently claimed invention is clearly patentable over the combination of Green and GB '504.

Ue and Williams teach using non-polymeric gelling agents to "hold in" the liquid electrolyte, where the gelling agents and the electrolyte are dissolved in a solvent, heated and then cooled down to settle. Green discloses an electrolyte as a composite of a polymer and a molten salt, where the electrolyte is prepared by mixing a polymer dissolved

²The Examiner alleged that the limitation regarding the bonding in claim 1 does not affect the patentability of the product claims, since this limitation only pertains to the process by which the product is made. The Examiner will note that this limitation does pertain to the product in that it specifies that the gelling agent is an associated body held together by intermolecular bonding, i.e., the limitation defines the structure of the gelling agent. However, solely to simplify matters, Applicants have amended claim 1 to clarify that the intermolecular bonding defines the product and not the process by which it is made.

in an organic solvent and a molten salt, with the mixture being cast on a glass substrate to form a film. Clearly, it would not have been obvious to a person skilled in the art to prepare a gel electrolyte using an ionically conductive material that is a liquid at working temperature (a molten salt) in place of a liquid electrolyte (electrolytic solution) with a gelling agent that gels forming an associated body via intermolecular bonding (a non-polymeric gelling agent).

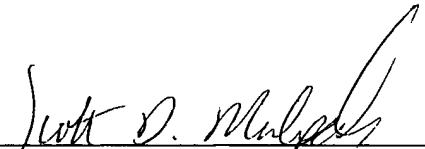
As a matter of law, the prior art must provide a reasonable expectation that the proposed modification will succeed. The Examiner is required to show that the prior art not only suggests doing what the inventor has done, but also that the art provides the required expectation of succeeding in that endeavor. See In re Dow. Chem., 5 U.S.P.Q.2d (BNA) 1529, 1531 (Fed. Cir. 1988). (“Both the suggestion and the expectation of success must be founded in the prior art, not in applicant’s disclosure”).

It is respectfully submitted that the Examiner has not shown, and Applicants have not found, one iota of disclosure in any of the cited references that would provide the requisite expectation of success. In fact, Applicants submit that it would not have been possible to predict that a gelling agent that gels forming an associated body via intermolecular bonding can gel in a molten salt without any or with only little organic solvent present based on the teachings of Ue, Williams and Green. Furthermore, the Examiner will note that the conductivity of the gel electrolyte of the present invention is considerably higher than that in Green, as shown in Fig. 5. Accordingly, as a matter of law, neither Ue nor Williams can be combined with Green to render the presently claimed invention unpatentable.

Wherefore, it is respectfully requested that the claims be allowed and that the case be passed to issue.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,


Attorney for Applicants

Registration No. 32,533

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

APPENDIX

Application No. 09/417,832
Attorney Docket No. 03500.013929

IN THE CLAIMS:

Claims 6 and 7 have been amended as follows:

6. (Twice Amended) A cell comprising an anode, an electrolyte and a cathode, wherein said electrolyte is the gel electrolyte of any one of claims 1, 2, [to] 4 or 5.

7. (Twice Amended) An electrochromic element comprising a pair of transparent electrodes between which an electrochromic layer which develops color on reduction and a transparent ionic conductor layer exist, wherein said ionic conductor layer contains the gel electrolyte of any one of claims 1, 2, [to] 4 or 5.

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